

What is claimed is:

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a' 1 1. A method of processing and storing data in a  
2 computer system including processor circuitry, and a data  
3 storage device, the method comprising the steps of:

4 storing first and second sets of records on the  
5 data storage device, the first and second sets of records  
6 being of different data resolutions and corresponding to  
7 overlapping periods of time;

8 operating the processor circuitry to receive  
9 data collected over a period of time; and

10 operating the processor circuitry to update at  
11 least one record in each of the stored first and second  
12 sets of records with the received data.

1 2. The method of claim 1,

2 wherein the first and second sets of records  
3 are stored in separate first-in, first-out data  
4 structures on the data storage device; and

5 wherein the step of operating the processor  
6 circuitry to update at least one record in each of the  
7 stored first and second sets of records, includes the  
8 step of replacing a previous record included in each of  
9 the first and second data structures.

a 1 3. The method of claim 2, further comprising the step  
2 of:

3 allocating fixed amounts of storage space on  
4 the data storage device for storing each one of the first  
5 and second first-in, first-out data structures used to  
6 store the first and second sets of records.

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o 1 4. The method of claim <sup>1</sup>/<sub>2</sub>, wherein the first set of  
2 records include hourly records and the second set of  
3 records includes daily records.

c 1 5. The method of claim <sup>1</sup>/<sub>2</sub>, further comprising the step  
2 of:  
3 periodically collecting network traffic data;  
4 storing the collected network traffic data in a  
5 buffer; and  
6 operating the processor circuitry to retrieve  
7 network traffic data from the buffer, the retrieved  
8 network traffic data being received by the processor  
9 circuitry.

1 6. The method of claim 5,  
2 wherein the network traffic data stored in the  
3 buffer includes time stamp information indicating the  
4 period of time in which the network traffic data was  
5 collected; and  
6 wherein the step of operating the processor  
7 circuitry to update at least one record in each of the  
8 stored first and second sets of records includes the step  
9 of:  
10 examining at least one time stamp included in  
11 the buffered network traffic data.

Sub 1 7. The method of claim 5, wherein the collected network  
2 traffic data includes byte and packet count information  
3 associated with each of a plurality of monitored  
4 conversations between devices included in the computer  
5 system, the step of operating the processor circuitry to

6 update at least one record in each of the stored first  
7 and second sets of records including the steps of:

8 updating a record corresponding to a first  
9 conversation in the first set of records; and

10 updating a record corresponding to the first  
11 conversation the second set of records.

1 8. The method of claim 5,

2 wherein the processor circuitry includes first  
3 and second central processing units, and

4 wherein the step of operating the processor  
5 circuitry to update at least one record in each of the  
6 stored first and second sets of records includes the step  
7 of operating the first processor to update the first set  
8 of records while operating the second processor to update  
9 the second set of records.

1 9. The method of claim 1,

2 wherein the processor circuitry includes first  
3 and second central processing units, and

4 wherein the step of operating the processor  
5 circuitry to update at least one record in each of the  
6 stored first and second sets of records includes the step  
7 of operating the first processor to update the first set  
8 of records while operating the second processor to update  
9 the second set of records.

1 10. The method of claim 5, wherein the computer system  
2 further includes a display device, the method further  
3 comprising the step of:

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1     14. The method of claim 12,  
2             wherein the collected network traffic data  
3 includes a plurality of traffic data counter values; and  
4             wherein each traffic data counter value in the  
5 collected network traffic data includes information  
6 corresponding to an individual monitored conversation,

7 the step of generating a database including the step of  
8 generating from the information on each different  
9 monitored conversation, a different record in each set of  
10 the plurality of network traffic data sets.

1 15. The method of claim 14, further comprising the step  
2 of storing each of the plurality of network traffic data  
3 sets in a different first-in, first-out data structure.

1 16. The method of claim 15, wherein a limited amount of  
2 data storage space is used for each of the different  
3 first-in, first out data structures, the method further  
4 comprising the step of:

5       overwriting the oldest data records in the  
6 first-in, first-out data structure used to store one of  
7 the network traffic data sets, when the limited amount of  
8 data storage space used for said first-in, first-out data  
9 structure is filled with records.

1 17. A system for monitoring network traffic data,  
2 comprising:

3       a plurality of network traffic data probes for  
4 collecting network traffic information;

5       processor circuitry coupled to the network  
6 traffic probes for receiving data therefrom; and

7       a data storage device for storing a network  
8 traffic database generated by the processor circuitry  
9 using data collected by the network traffic data probes,  
10 the data storage device including:

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11 a plurality of data structures, each one of the  
12 plurality of data structures including network traffic  
13 data:

14 a) stored at a different resolution than the  
15 resolution at which network traffic data is stored  
16 in the other ones of the plurality of data  
17 structures; and

18 b) corresponding to a period of time which  
19 overlaps the period of time for which network  
20 traffic data is stored in the other ones of the  
21 plurality of data structures.

1 18. The system of claim 17, wherein each of the  
2 plurality of data structures is a first-in, first-out  
3 data structure.

1 19. The system of claim <sup>17</sup>18, wherein each one of the  
2 plurality of data structures includes a plurality of data  
3 records, each data record corresponding to a monitored  
4 network conversation.

a 1 20. The system of claim <sup>17</sup>18, wherein data records are  
2 arranged within each individual data structure as a  
3 function of the time the conversation to which the record  
4 corresponds was monitored.

1 21. The system of claim 20, wherein records which were  
2 monitored during the same time interval are grouped  
3 together within each individual data structure.

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1 22. The system of claim 21, further comprising:  
2 means for modifying at least one network  
3 traffic data record included in each one of the plurality  
4 of data structures to reflect collected information about  
5 an individual network conversation.

2 1  
1 23. The system of claim <sup>17</sup>18, further comprising:  
2 means for modifying at least one network  
3 traffic data record included in each one of the plurality  
4 of data structures to reflect collected information about  
5 an individual network conversation.

1 24. The system of claim <sup>17</sup>18, wherein the processor  
2 circuitry includes a plurality of separate central  
3 processing units which operate in parallel.

1 25. The system of claim 24, wherein each one of the  
2 plurality of data structures includes a plurality of data  
3 records, each data record corresponding to a monitored  
4 network conversation.

1 26. The system of claim 24, wherein data records are  
2 arranged within each individual data structure as a  
3 function of the time the conversation to which the record  
4 corresponds was monitored.

1 27. The system of claim 26, wherein records which were  
2 monitored during the same time interval are grouped  
3 together within each individual data structure.

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1 28. The system of claim 27, further comprising:  
2 means for modifying at least one network  
3 traffic data record included in each one of the plurality  
4 of data structures to reflect collected information about  
5 an individual network conversation.

1 29. The system of claim 24, further comprising:  
2 means for modifying at least one network  
3 traffic data record included in each one of the plurality  
4 of data structures to reflect collected information about  
5 an individual network conversation.

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